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ABSTRACT

Higher education and research in Finland are discussed, with attention to Finnish society, the general structure of the Finnish education system, the higher education system, and scientific research. Specific concerns include the following: the social system, the demographic and economic structure, the comprehensive school, secondary education and vocational education, adult education, central educational administration, higher education administration, the quantitative and regional framework of the higher education system, higher education resources, the teaching staff, the degree system, postgraduate education, supplementary education, summer universities, the open university, student selection, student organizations, and student life (e.g., financial aid, health care, accommodations). Research considerations include science administration, science policy, the position of the higher education institutions in research and development work, and activities supporting research. (SW)

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Higher Education and Research in Finland

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The monument "Take-off" by Markku Viitasalo was revealed in August 1982 outside the University of Kuopio by Savilahti Bay.
Photo: Pekka Kuhmonen, 1982

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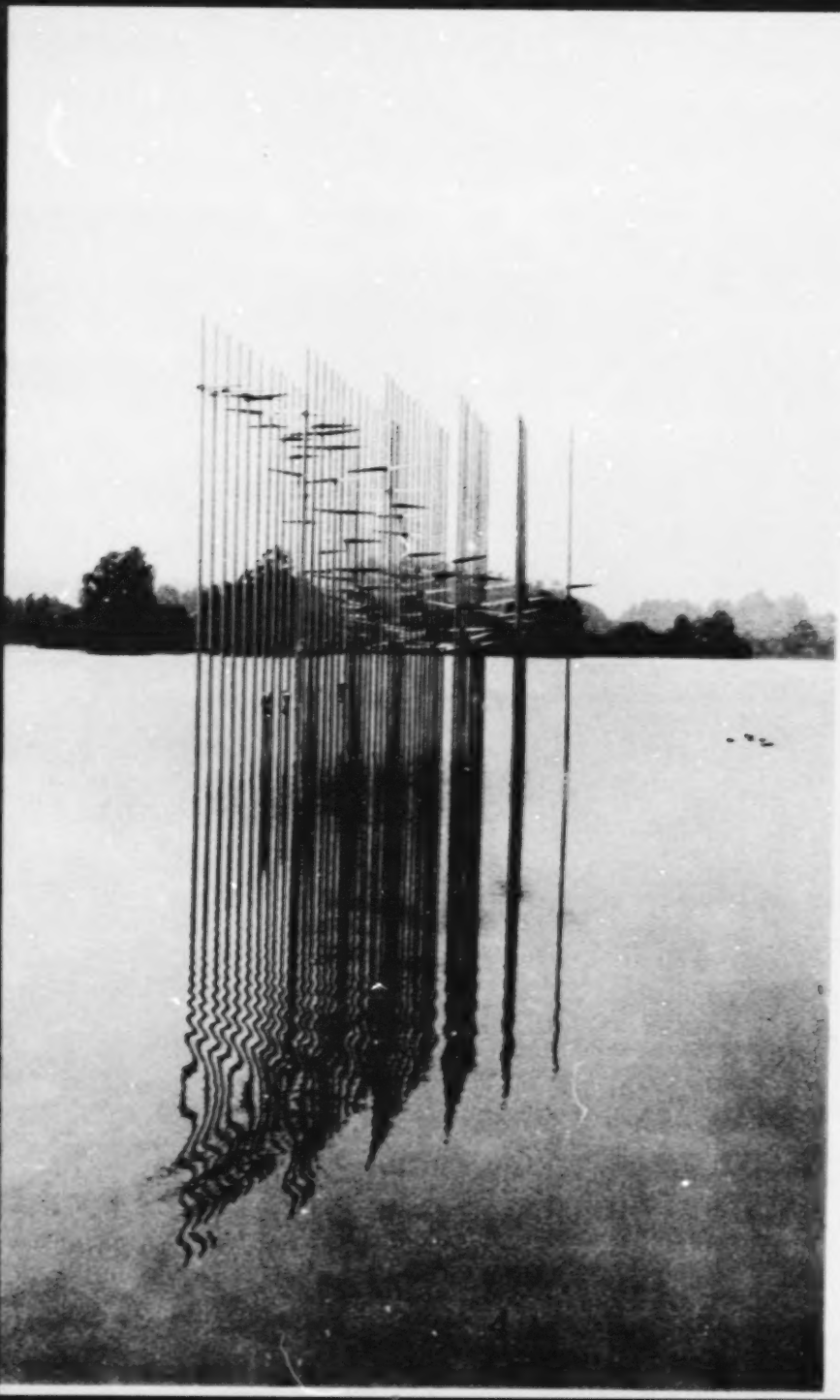

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1 FINNISH SOCIETY

1.1 General

Finland is one of the most northerly countries in the world. About one thrid of the surface (337 000 sq. kilometers or 130 000 sq. miles) lies north of the Arctic Circle. In the West Finland borders to Sweden and the Golf of Bothnia, in the North to Norway, in the East to the Soviet Union and in the south to the Gulf of Finland.

The population of Finland is 4.8 million of which some 750 000 live in the Greater Helsinki Area (Helsinki 484 000). About 60 per cent of the people live in the towns and urban areas, but the density of the population is one of the smallest in Europe (15.6 inhabitants per sq. kilometers).

Finland is officially a bilingual country. The majority of 93 % have Finnish, and the minority of 6,5 % have Swedish as their mother tongue.

1.2 Social System and Administration

Finland was part of the Swedish Kingdom from the middle of the 12th century until 1809 when it became an autonomous Grand Duchy ruled by the Czar of Russia as the Grand Duke of Finland. Finnish Independence was proclaimed on the 6th of December 1917 and the main constitutional acts were passed through Parliament in 1919 and 1921.

According to the Constitution the legislative power lies with the unicameral Parliament of 200 elected members. The preparatory work in Parliament is carried out by special committees of which the Cultural Affairs Committee handles educational matters.

The Members of Parliament and the President are endowed with the right to submit bills and proposals for law amendments before Parliament.

The supreme executive power lies with the President elected every six years through indirect elections. The highest executive and administrative body is the Council of State (Cabinet) which consists of not more than 18 Ministers appointed by the President. According to the Constitution the Cabinet must enjoy the confidence of Parliament.

In an administrative sense Finland is divided into provinces and municipalities. There are 11 provinces administrated by a Provincial Government, and one autonomous province, the Åland Islands (Ahvenanmaa). The Provincial Governments are the supreme executive authorities in the provinces, and they deal i.a. with many matters relating to education, social welfare and health care.

The local administration is in the hands of 461 municipalities which are endowed with certain independent administrative functions.

1.3 Demographic and Economic Structure

The population of Finland (4.8 million) has during the last few years showed an annual growth of 15 000 – 20 000 persons or 0.5 %. Nativity has gone down to a level which will lead to a decrease in the population by the end of the 1990s.

The age structure in Finland is younger than in most other European countries although the share of the old age groups is growing rapidly. The share of the under 15-year olds is expected to decrease, while the number of over 65-year olds will increase – a trend that is common to most European countries.

The working population will continue to grow until the end of the 1980s, after which the growth is expected to decelerate and the proportion of 45-64 year olds grow. The share of the active working population will remain in Finland greater than in the other Nordic countries.

The regional distribution of the population has changed considerably since the 1960s. A clear growth can be seen only in Southern Finland. After the mid-70s the demographic development has evened and the population growth in the Greater Helsinki Area has slowed down. Regional measures have been taken to promote a balanced population trend with a view to maintaining the population figures in the developing areas at the 1975 level.

Since the Second World War the manpower structure in Finland has undergone some of the most abrupt changes in the industrialized world. The share of the population employed in agriculture and forestry has gone down from 45 % in the 1950s, 36 % in 1960, to 20 % in 1970. The present percentage of the population employed in this sector is 11 %; a level it is expected to maintain in the near future.

Finland has rapidly developed from an agrarian society into a service society. The share of the labour force employed in industry has reached 36 %, from which it has declined to the present 34 %. In many other industrialized countries the corresponding peak has clearly exceeded 40 %. The service sector has in Finland grown faster than in any other industrialized country and represents today some 52 %. The growth of working places is assumed to be the fastest in the public service sector, but at the same time an unemployment rate of 4 - 5 percent is forecasted.

Since the 1950s the demographic structure of the country has been affected by the migration wave to Sweden. In the 1950s some 70 000 Finns moved to Sweden, and in the 1960s the net migration rose to 160 000 after which it declined to the 1950 level. The migration has affected primarily the size of the younger age groups, today every tenth Finnish child is born in Sweden.

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2 GENERAL STRUCTURE OF THE FINNISH EDUCATION SYSTEM

The education system in Finland has undergone profound changes since the early 1970s. The compulsory nine-year comprehensive school was introduced in the 1970s, followed by a reform of the secondary education in the 1980s. The aim is to make the upper secondary school providing general education and the vocational education a uniform secondary education system.

During the 1960s and the 1970s an extensive reform was also carried out in higher education with a view to achieving a more even distribution of education provisions in the entire country. The reform has implied considerable increase in the allocation of resources for higher education and research as well as a reform of the degree system.

Most of the education system in Finland is public. Primary education is administered by the municipalities, and the secondary education institutions by the municipalities, associations of municipalities, the state, and in some cases also private foundations. All higher education institutions are endowed with administrative autonomy but are subordinate to the Ministry of Education.

2.1 Comprehensive School

The comprehensive school in Finland takes nine years and is divided between the six-year lower level and the three-year upper level shcool. The instruction on the lower level is given by class teachers with a general training in education. The teaching on the upper level is done by subject teachers specialized in one or two subjects.

As a rule the pupils begin the comprehensive school the year when they reach seven years of age. The comprehensive school is compulsory and free of charge for all. The pupils receive all textbooks and other study material, as well as one meal a day. For pupils who live a long way from school free transportation, and if necessary accomodation, are arranged.

The subjects and syllabi are the same for all pupils on the lower level. Individual differences are taken into consideration in the use of teaching methods. Teaching on the upper level is carried out after division into study groups.

2.2 Secondary Education

The secondary education system in Finland consists of the three-year upper secondary school and the vocational education institutions. Vocationally differentiated education is arranged on school- and institute-level. The division corresponds to the occupational hierarchy in working life.

2.2.1 Upper Secondary School Education

The three-year upper secondary school provides general education. The main function of the upper secondary school is still to prepare for university-level studies although only 50 % of the matriculated

students can be admitted to the higher education institutions.

The subjects taught in the upper secondary school are divided into **common subjects** (the mother tongue, second national language, first foreign language, mathematics, geography, biology, history and civics, religion, physical education, and health education as well as visual art education or music) and **optional subjects.** In mathematics the students may choose between two courses of different length.

The optional subjects are the third foreign language, physics, chemistry (short or extended course), psychology and philosophy, geography, and visual art education or music. In practice, however, the alternatives are restricted by the prescribed maximum programme of 32 hours.

The upper secondary school curriculum is heavily dominated by language studies. The compulsory language studies, including the mother tongue, represent 30 % of the study programme on the first and second grades, and some 40 % on the third grade. The share of mathematics and natural sciences is correspondingly 20 % and 10 %.

Pupils in the upper secondary school work 190 days per school year during two semesters five days a week. The school year is divided into two terms. The upper secondary schools which adopt a course-based curriculum work in five or six periods.

The upper secondary school studies terminate in the matriculation examination when all students in the entire country are evaluated according to the same criteria. The matriculation examination gives general eligbility for higher education studies.

2.2.2 Vocational Education

The vocational education system is undergoing an extensive reform which will be completed by the end of the 1980s. As a result of this reform the former 650 study lines will be combined into 24 basic branches. The basic branches are further divided into 220 specialization branches of which 119 are on school-level and 103 on institute-level. A student entering the vocational education system will first choose his/her field of study, and thereafter the level of studies according to personal abilities.

Studies in the basic branches start with a one-year general period. The shorter specialization branches also last one year. Thus the minimum lenght of time in vocational education is two years. The studies on institute-level vary between three and five years.

2.3 Adult Education

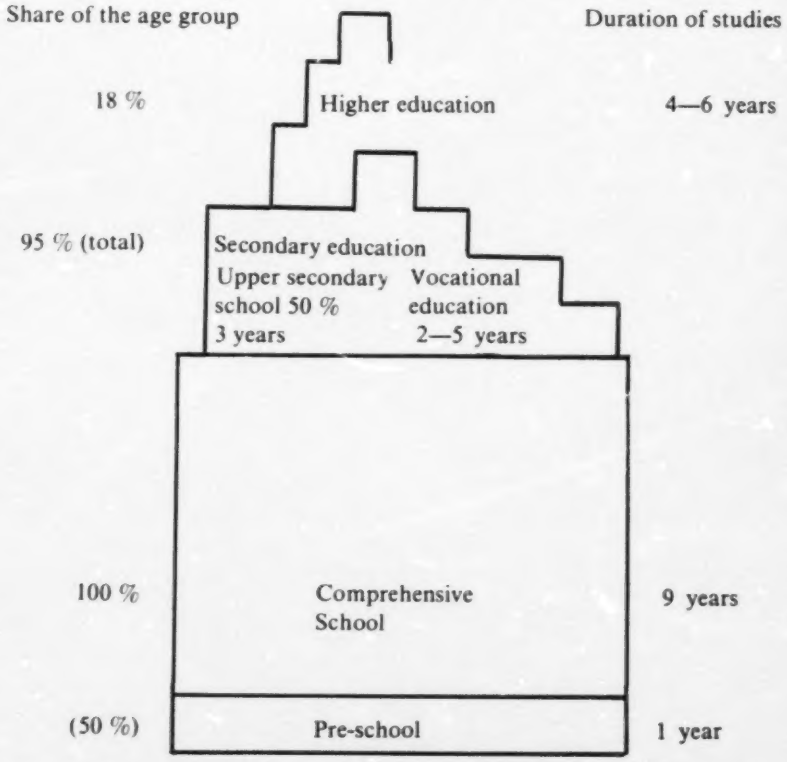
Adult education in Finland consists of several different educational forms which are all voluntary. Adult education is traditionally a study form which provides general, social and hobby-oriented educational opportunities. Recently, however,

more attention has also been paid to vocational adult education.

The most important share of adult education is given in workers and civic institutes. The aim of these institutes is to develop the adult students skills, and knowledge that are useful in social life, and provide a basis for further independet studies. During the academic year 1979-80 there were 270 active workers and civic institutes with some 550 000 students.

Adult education is also arranged in folk high schools, study centers, evening schools and by civic organizations and public libraries. Unemployed and potential unemployed workers can also benefit from employment training.

According to a study from the early 1970s more than 20 % of the adult population in Finland participated in some form of adult education, and some 60 % had participated at some stage of their life.



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2.4 Central Educational Administration

The central administration in educational matters consists of the Ministry of Education, and the National Boards of General Education and Vocational Education, both subordinated to the Ministry. The Ministry is responsible for the preparation of legislation and the general principles and guidelines in educational policy. The National Boards are the executive bodies endowed with decision-making power in matters concerning the content of education and teaching methods.

The Ministry of Education consists of six departments and a Planning Secretariat. The Departments are:

1) General Department
2) School Department
3) Department for Higher Education and Research
4) Arts Department
5) Department for Sports and Youth Affairs
6) Department for International Relations

Matters pertaining to general education, vocational and adult education fall within the competence area of the School Department. The department has an advisory body, the Council for School Affairs, consisting of representatives for the most important educational authorities, the labour organizations, the municipal central organizations and the education research sector. The Advisory Council for the Secondary Education Reform assists the Ministry in matters concerning the principles of the implementation of the secondary education reform.

The higher education institutions are directly subordinate to the Ministry of Education.

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3.1 The Quantitative and Regional Framework of the Higher Education System

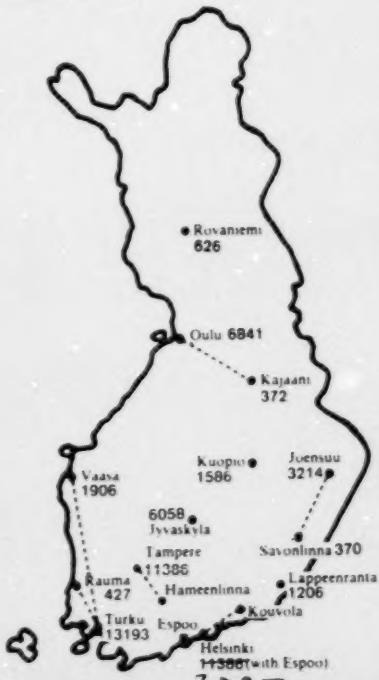
There are 17 universities or other higher education institutions which carry out scientific research. These institutions are subordinate to the Act on the development of higher education (1966) which has defined the quantitative goals to the year 1986. In addition to the scientific universities there are three higher education institutions in the arts, and the Swedish School for Social Work and Local Administration The first university in Finland was founded in 1640 in Turku (today the University of Helsinki). The newest university – the University of Lapland – started its activities in Rovaniemi in 1979.

During the past twenty years the Finnish higher education system has expanded rapidly. The most significant structural change relates to the growth of education in the sciences, engineering and medicine, as opposed to the humanities and social sciences. The other important development trend concerns the regional expansion. Higher education provisions are no longer concentrated to Helsinki and Turku, but are evenly distributed in the whole country.

Technology, economics and business administration are the study fields with the most direct impact on the industry and economy. There are five universities which teach the engineering sciences (the Universities of Technology in Helsinki, Tampere, Oulu, Lappeenranta and Turku, and the Department of Chemical Engineering of Åbo Akademi). Higher education studies in economics and business administration can be pursued in seven institutions. Thus as a whole, the supply of educational provisions in these fields corresponds to the national needs and economic level of the country.

During the early years of Finnish Independence the number of university stu-

Regional Distribution of Students at Institutions of Higher Education in the Autumn of 1982



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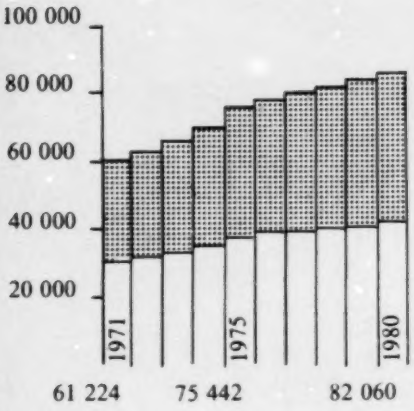
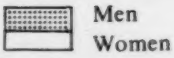
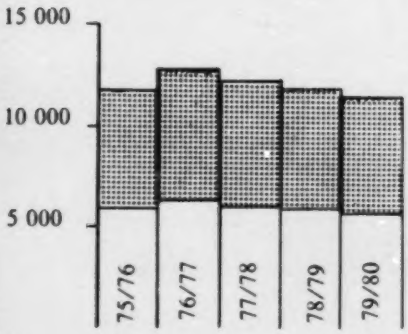
Number of Students in Scientific Universities 1971—1980





Number of Degrees 1975/76—1979/80



dents in Finland was some 4 000 students in Helsinki and Turku. The stipulation of the Compulsory School Act in 1921 and the expansion of secondary schools increased the number of matriculated students, and already in the 1930s one began to talk about a overflow of matriculated students. The number of university students rose to approximately 9 000.

After the Second World War the number of students increased slowly until the late 1950s when the growth accelerated. During the 1960s the number of students doubled (from 23 600 in 1960 to 42 000 in 1965); the trend continued in the 1970s. In 1982 there were some 86 000 students of whom fifty per cent were women. The share of women students varies, however, considerably from one study field to another.

The expansion of higher education in Finland can be explained by the comparatively late and rapid changes in the economic structure, by the large post-war age groups, and by changes in the whole educational system, mainly the growth of upper secondary school education.

An essential feature of higher education in the 1980s is the stabilization of the number of students. New students will be admitted to the universities at an annual rate of approximately 12 000, and the total number of students will remain around 80 000. The university students represent today some 17 % of the age groups but as a result of the diminishing age groups the percentage will rise to 20 %.

Eligibility for higher education is obtained by the passing of the matriculation examination from the upper secondary school as well as an entrance examination arranged by the universities themselves. In accordance with the adopted policy more possibilities have been offered to students from the vocational institutes to continue their studies in the universities. Today some 4 % of the university students have taken the vocational channel to higher education. The Ministry of Education has made a recommendation that 5 to 15 % of the openings, depending on the study field, should be reserved for students with a vocational institute certificate. These possibilities have been used particularly in the fields of technology, economics and business administration.

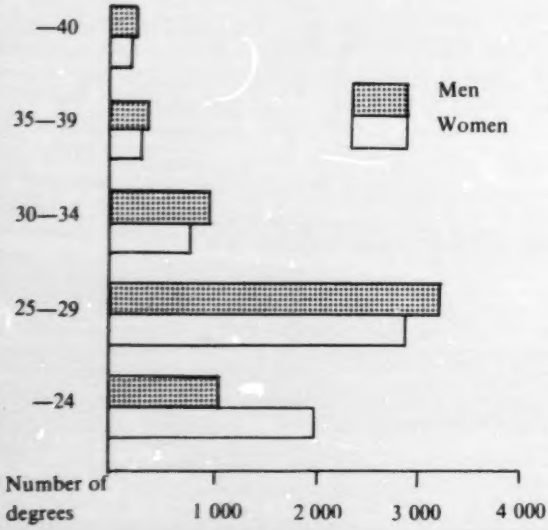
The primary target of the quantitative planning is to offer all students leaving the comprehensive school and the upper secondary school an opening in the universities or in the secondary vocational institutions. The second aim is to distribute these openings between the various levels and fields of study in a way corresponding to the needs of society and the working life.

The number of graduated students has increased rapidly during the past decades. In 1960 3.5 % of the population had an academic degree, and in 1979 their number had increased to 7 %. Due to the general deterioration of the situation on the labour market unemployment has been a fact in nearly all academic fields. The unemployment rate among academic

The Number of Foreign Students by Study Field 1979/80

		of whom post-graduate students
Theology	12	2
Music	15	8
Other Art Subjects	29	2
Humanities	277	64
Law	6	4
Social Sciences	102	24
Agriculture and Forestry	28	6
Natural Sciences	64	17
Education, Physical Education	17	2
Technology	89	42
Medical Sciences	9	–
TOTAL	648	171

Degrees According to Age 1979/80



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Distribution of Scientific Fields in Higher Education

	Techno-logy	Natural sciences	Econ.	Med.	Agro. & For.	Soc. Sc.	Human-ities	Law	Pharm.	Arts
HY		×	×	×	×	×	×	×	×	
TKK	×	×	×							
HKKK			×					×		
SHH			×							
EKK				×						
SSKH			×			×				
TTK										×
JoKK		×	×		(×)	×	×			
JY		×	×	×		×	×			
KuKK		×		×		×	×		×	
LTKK	×		×							
OY	×	×	×	×		×	×			
LaKK			×			×		×		
TTKK	×	×	×							
TaY		×	×	×		×	×	×		
TKKK			×							
TuY		×	×	×		×	×	×		
ÅA	×	×	×			×	×	×	×	
VaKK			×			×	×	×		

workers was 1.5 % in 1981, which is far below the average rate for other professional groups. In order to alleviate academic unemployment the linkage between higher education and the practical working life, as well as the possibilities of graduated students to find employment are being improved by developing work practice for students.

Institutions of Higher Education in Finland

University of Helsinki (HY)
Helsinki University of Technology (TKK)
Helsinki School of Economics and Business Administration (HKKK)
Swedish School of Economics and Business Administration (SHH)
College of Veterinary Medicine (EKK)
Swedish School of Social Work and Local Administration (SSKH)
University of Industrial Arts (TTK)
University of Joensuu (JoKK)
University of Jyväskylä (JY)
University of Kuopio (KuKK)
Lappeenranta University of Technology (LTKK)
University of Oulu (OY)
University of Lapland (LaKK)
University of Tampere (TaY)
Tampere University of Technology (TTKK)
University of Turku (TuY)
Turku School of Economics and Business Administration (TKKK)
Åbo Akademi (ÅA)
University of Vaasa (VKK)

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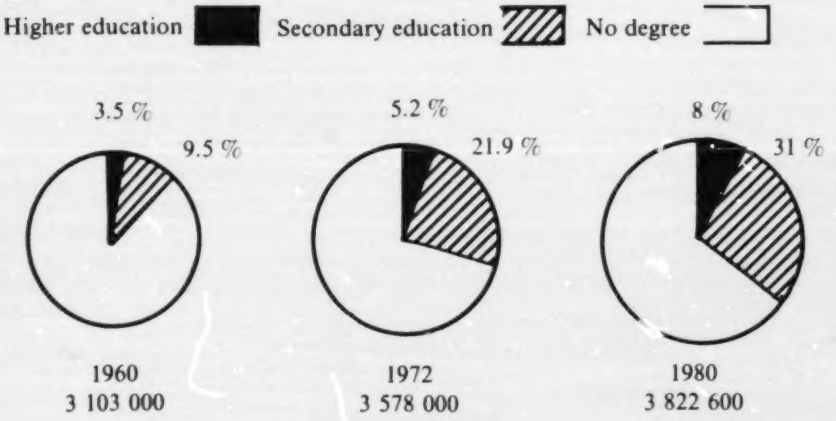
Number and Percentage of Graduates of the Over 15-Year Old Population in 1960, 1972 and 1980



University Graduates

Educational level	1960	1972	1980
Secondary education	282 000	785 000	1 190 000
Higher education	109 000	187 000	295 000

3.2 Higher Education Administration

3.2.1 Central Administration

All universtities and other institutions of higher education are directly subordinate to the Ministry of Education. Matters pertaining to higher education and scientific research are handled by the Department for Higher Education and Research which is divided into five bureaus. The higher education institutions in the arts fall under competence field of the Arts Department.

The Department for Higher Education and Research is in charge of the general development and planning of higher education. The Department also prepares matters to be submitted for decision-

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making before Parliament, the President, the Cabinet and the Minister of Education. The most relevant planning issues relate to development plans, budgets, the determination of student quotas, general administration, degrees and instruction in general. The Department also prepares the annual budget propositions and legislation for the Cabinet and Parliament. The development work is carried out in cooperation with the universities which also prepare budgetary and legislative proposals.

3.2.2 Advisory Bodies

The Science Policy Council is a special advisory body which assists the Cabinet and the Ministry in matters pertaining to science and research.

The advisory body in matters concerning higher education is the Council for Higher Education appointed for a three-year period. The Council prepares and submits proposals and initiatives in matters of importance to the planning and development of the universities.

In matters concerning teacher education the Ministry is assisted by the Council for Teacher Education.

3.2.3 Internal Administration of Higher Education Institutions

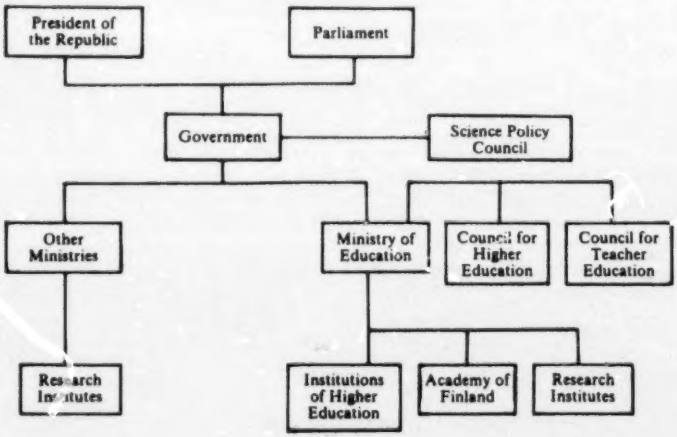
The institutions of higher education are according to law guaranteed autonomy in internal matters. The internal administration of the universities has been reformed since 1974 and the new administrative model has today been introduced in nearly all universities. A separate Act and more detailed Decrees have been stipulated for each institution.

The central decision-making bodies in universities which have adopted the new administrative model are the University Council (only in the larger universities) and the Administrative Council. The lower administrative bodies are the Faculty, the Department and the Institute Councils. The composition of the administrative bodies follow the three-quota principle according to which the professors and associate professors elect one third of the members, the other staff one third and the students also one third of the members. In matters requiring scientific competence or relating to the evaluation of study achievements only the members with the adequate qualificatons may participate.

The universities decide about the content, the methods and practical arrangement of the instruction and research. National guidelines and directives only apply to the general frames of the degrees and the goals of the education.

The universities select their own students. The Cabinet issues every two years a recommendation concerning the number of new students to be admitted in the various study fields and institutions, but the final decision lies with the universities themselves. The selection criteria are likewise determined by the universities on the

The Administration of Higher Education and Research in Finland



basis of a recommandation given by the Ministry of Education.

The nominations of university professors and higher administrative officials are made by the President and the Ministry of Education, but the nomination of associate professors and other teaching staff is done by the universities.

3.3 Higher Education Resources

Today all institutions of higher education are financed by the State. The means for higher education are allocated through the Budget approved by Parliament. The Ministry of Education supervises the use of resources in all universities and submits the annual proposals for the university budgets to the Cabinet, which are based on the proposals made by the universities and statements from the Council for Higher Education. The general frames for the budgetary proposals are stipulated in the Act for the Development of Higher Education.

The aim of the Development Act is on one hand to develop higher education in accordance with the social needs, and on the other hand to guarantee up-to-date higher education and research in each institution and on each study field. The Development Act stipulates certain minimum targets concerning the number of teachers and other staff as well as teaching facilities up to the year 1986. The allocation of budgetary resources is also determined within the framework of the Development Act.

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Expenditure on Higher Education in the State Budget and its Percentage of the Budget of the Ministry of Education and of the State Budget in 1975—1982

Year	Higher education in millions of FIM	% of the Budget of the Ministry of Education	% of the Stage Budget
1975	723	19	3.3
1976	861	17	3.0
1977	915	15	2.8
1978	1,005	14	2.7
1979	1,057	14	2.4
1980	1,078	13	2.2
1981	1,283	13	2.3
1982	1,481	13.5	2.3

The study fields are divided between the following main research fields:

I Theology, the Humanities, Law, Social Sciences and Economics and Business Administration

II Natural Sciences, Agriculture and Forestry, and Physical Education

III Engineering and Technology

IV Medicine, Dentistry, Veterinary Medicine and Pharmacology

A student place is the basic unit used in the Development Act for the determination of the required teaching, research, administrative, and other resources per full-time student. The number of student places required per full-time teacher by the end of 1986 has been determined by Decree (see below).

In accordance with a Government Decree the Cabinet confirms every two years the Development Plan for Higher Education. The Development Plan prescribes the increases and decreases in students places that will be carried out in the universities to the year 1986 bearing in mind an adequate regional supply of higher education provisions.

	Number of student places per full-time teacher	Space per student place
I	12	8 m^2
II	9	23 m^2
III	9	25 m^2
IV	6	25 m^2

3.4 Teaching Staff

In 1982 there were 5 087 permanent teaching posts or positions, and 1 530 part-time teachers employed in higher education. The posts and positions are distributed between the different professional groups as follows:

Professors	856
Associate professors	677
Lecturers and corresponding teachers	1 425
Senior assistants	225
Assistants	1 904

The development plan also constitutes the basis for a more detailed allocation of resources. The number of teachers in the universities which engage in scientific research was in 1983 nearly 6000 (full-time posts as well as part-time posts converted into full-time posts). According to the legislation their number will be 6300 by 1986. Auxiliary personnel in teaching and research comprised some 7000 persons; according to plans their number will increase with 400 during 1984-86.

The professors are nominated by the President, and other teachers are nominated or designated by the universities. The teaching posts and positions are permanent nominations with the exception of some temporary positions and assistant posts which involve teaching duties as well as postgraduate studies. Part-time teachers are employed for not more than one academic year at a time for a specific teaching duty.

The qualification requirements vary to some extent from one university and study field to another. The general qualification requirement for professors and associate professors is scientific competence, and in universities in the arts artistic competence, in addition to teaching skills and adequate practical knowledge of the field. Professors and associate professors have a doctoral degree. Nominations for senior lecturer posts presuppose a licentiate degree. The general qualification requirement for other teacher posts and positions is, with a few exceptions, a higher university degree, corresponding to the basic degree in the reformed degree system (a Master's degree).

The tasks of the professors and associate professors involve following the developments in their own scientific field, directing scientific research, as well as teaching duties. The lecturers have teaching duties, and the assistants shall perform independent scientific research and engage in post-graduate studies in addition to performing teaching duties. All university teachers also have various administrative duties.

The number of an assistant's working hours (including own research) corresponds to that of a state official. The working hours of other university teachers have not been specified in the same way, but the duties involve a certain number of teaching hours per year. A professor is required to give 140 hours, and an associate professor

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186 hours, of lectures or equivalent teaching. The corresponding figure for senior lecturers is 392, of which not less than 56 and not more than 112 hours as lectures, and for junior lecturers 448 hours, of which 28 hours as lectures. The teaching duties in the universities in the arts are higher.

The autumn and spring terms in the university include from 28 to 32 effective working weeks.

Pedagogical training is only required for lecturers in teacher training institutions. The teaching skills are assessed in demonstration lessons. Pedagogical training for university teachers has to date been arranged occasionally and to a limited extent, but in connection with the degree reform more attention has been paid to the development of higher education pedagogics.

3.5 Teaching in Higher Education

3.5.1 Degree System

The debate concerning the reformation of the degree system was started in the mid-60s. The large number of drop-outs, the long duration of the studies and the lack of linkage with working life in some fields were considered to be the most serious drawbacks of the old system.

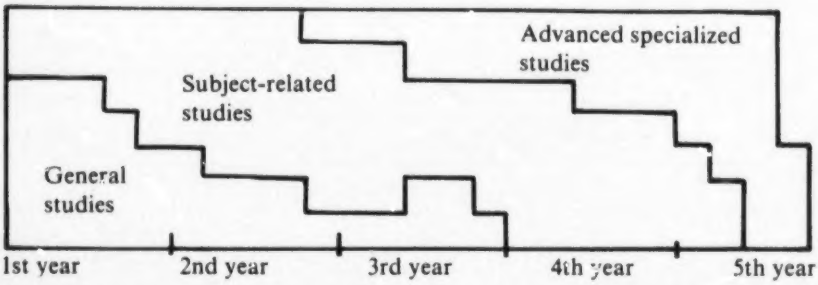
In 1969 a committee was appointed to plan the reformation of the most problematic study fields: philosophy and social sciences. In 1974 the Cabinet made a decision-in-principle concerning the reformation of the degrees in all study fields which to the most parts was based on the ideas put forward by the Committee. The central aims of the decision-in-principle are to introduce a more scientific approach to vocational education on one hand, and a more professional approach to the disciplines that are felt as being too theoretical. According to the decision-in-principle the basic degree will be taken after four years of studies, but this requirement has later been revised.

The degree reform was implemented gradually; during the period from 1974 to 1980 Government Decrees outlining the basic structure and main goals of the degrees were issued for the 18 main study fields. The provisions in the Decrees are specified in the degree regulations and annual curricula prepared by the institutions. The new degree system was first introduced in the field of law and medicine in 1977 and the last study field, drama, adopted the new regulations in 1981.

According to the old degree system the students pursue degree studies of varying length and depth in three or four subjects. The most advanced studies, laudatur-studies, were taken in the main subject, and cumlaude- and approbatur studies in the two or three minor subjects. If a student aimed at a lower degree (Bachelor's Degree) only cumlaude level studies were required in the main subject.

Basic degrees and post-graduate degrees can be taken in 18 study fields. The

The Structure of the Basic Degree in the Humanities



The total extent of this degree is 164 credits, i.e. four credits more than the minimum. It contains 39 credits of general studies, 84 credits of subject-related studies and 41 credits of advanced specialized studies. The minimum time required to take this degree would be about five years.

basic degree is roughly equivalent to the Master's degree in the Anglo-Saxon countries, and is referred to as Candidate degrees (for instance **psykologian kandidaatti-tutkinto**). The post-graduate degrees are the licentiate and the doctorate degrees. According to the new system the licentiate degree is not required before taking the doctorate degree.

A lower university degree (roughly equivalent to the Bachelor's Degree) can still be taken in some fields; i.e. in Law (Lower Law Degree), and in social sciences as the University of Tampere, and at the Swedish School for Social Work and Local Administration. The degrees in pharmacology and kindergarten teacher education are institute-level, although they are arranged by the universities.

The studies for the basic degrees are carried out as **degree programmes**. A degree programme is an interdisciplinary block of studies aiming at providing scientific knowledge for a certain task area in society by combining practical and theoretical knowledge. The degree programme may also consist of alternative study courses referring to scientifically and professionally differentiated courses.

The degree programme consists of several **credit units**. One credit unit refers to the input of work required to complete a certain block of studies, and it may include lectures, exercises, independent reading etc. The minimum input required for the completion of a basic degree is usually 160 credit units corresponding to from 5 to 6 years of studies. The basic degree in engineering and psychology as

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Basic and Post-Graduate Degrees in Institutions of Higher Education Awarded in 1970, 1975 and 1980

Degree	1970	1975	1980
Doctorate	165	229	305
Licentiate	292	318	319
Higher university degree	3862	4345	5187

well as in most fields of the arts and for subject teachers consists of 180 credit units. A degree in medicine presupposes from 200 to 250 credit units.

The basic structural and contextual unit of the degree programme is the **study module.** All teaching arrarged by the universities is part of some study module. The extent of one study module varies from one to ten credit units and may include different study forms: lectures, exercises, examinations based on textbook reading, seminars etc. Most of the study modules are compulsory for the completion of the degree programme or altemative study course. Some study modules are optional, but the share of free courses is limited.

The content of the degree programmes can also be classified according to discipline (subject). The most advanced studies are pursued in the student's main discipline and qualify for post-graduate studies. Usually the students take several disciplines simultaneously.

The studies can also be divided into general, subject related, and advanced specialized studies. This classification refers to the depth and the general aims of the studies.

The aim of the **general studies** is to familiarize the students with the general principles of scientific research and argumentation, and to give a broad-based basic knowledge needed for the subject and advanced studies. At this stage the students get an insight in the study environment, and in the planning, aims and advancement of the studies. The general studies constitute an interdisciplinary, theoretical and methodo-

logical basis for the studies and represent about one fourth of the whole study input.

As a rule the **language studies** are part of the general studies. The completion of all basic degrees presupposes studies in the second national language and in one or two foreign languages. Emphasis is laid on the acquisition of a practical language proficiency needed for following developments in the own disciplines. The basic degree also includes studies or a written test in the mother tongue.

During the **subject related studies** the students concentrate on the central concepts, theories, methods and research results in their own field. The subject represent about one half of the entire study period.

The main aim of the **advanced specialized studies** is to develop the students' personal ability to acquire and apply scientific information. The most important part of these studies consist of the preparation of a scientific thesis.

3.5.2 Post-Graduate Education

The main task of post-graduate studies is to train researchers and high-level experts. In principle every student who has completed the basic degree can pursue studies for the licentiate and the doctorate degrees. An essential part of the post-graduate studies consists of the preparation of a scientific dissertation. According to the plans about 25 % of the work input is occupied by organized instruction in the philosophy of science, methodology, higher education pedagogics and in the own specialization field.

About 8 % of all university students pursue post-graduate studies. Most of these students are employed as assistants in the universities or as researchers. About 7 % of the graduated students take the licentiate degree and 5 % take the doctorate degree. Most of the post-graduate degrees are taken in the field of medicine and the natural sciences.

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BASIC AND POST-GRADUATE DEGREES IN ALL STUDY FIELDS

Study Field	Basic Degree	Post-Graduate Degree
Theology	Master of Theology	Licentiate in Theology Doctor of Theology
The Humanities	Bachelor of Arts Master of Arts	Licentiate in Philosphy Doctor of Philosophy
Law	Lower Law Degree Master of Laws	Licentiate in Laws Doctor of Laws
Social Sciences	Master of Administrative Sciences Master of Health Administration Master of Political Sciences Master of Social Sciences	Licentiate in Administrative Sciences Licentiate in Health Administration Licentiate in Political Sciences Licentiate in Social Sciences Doctor of Administrative Sciences Doctor of Health Administration Doctor of Political Sciences Doctor of Social Sciences
Economics and Business Administration	Master of Economic Sciences	Licentiate in Economic Sciences Doctor of Economic Sciences
Psychology	Master of Psychology	Licentiate in Psychology Doctor of Psychology
The Natural Sciences	Bachelor of Science Master of Science	Licentiate in Philosophy Doctor of Philosophy
Education	Master of Education	Licentiate in Education Doctor of Education

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Agriculture and Forestry	Master of Science in Agriculture and Forestry Master of Food Sciences	Licentiate in Agriculture and Forestry Doctor of Agriculture and Forestry
Engineering and Architecture	Master of Science in Technology Master of Science in Architecture	Licentiate in Technology Doctor of Technology
Medicine	Licentiate in Medicine	Specialist's Degree in Medicine Doctor of Medicine
Dentistry	Licentiate in Dentistry	Specialist's Degree in Dentistry Doctor of Dentistry
Veterinary Medicine	Licentiate in Veterinary Medicine	Doctor of Veterinary Medicine
Pharmacy	Master of Science in Pharmacy	Licentiate in Pharmacy Doctor of Pharmacy
Physical Education	Master of Physical education	Licentiate in Physical Education Doctor of Physical Education
Industrial Arts	Master of Arts (in Art Education/in Visual Communication/in Product and Environmental Design)	Licentiate in Arts Doctor of Arts
Music	Master of Music	Licentiate in Music Doctor of Music
Theatre and Drama	Master of Theatre and Drama	Licentiate in Theatre and Drama Doctor of Theatre and Drama

3.5.3 Supplementary Education

In addition to basic and post-graduate education, the universities also arrange supplementary education. To date the supply of supplementary education has been limited but there are clear signs of expansion in this area in the 1980s.

There are different types of university-level supplementary education the most important of which are:

- supplementary courses at different levels arranged by the universities for graduated students or for representatives of specific science fields,
- supplementary education arranged by separate training centres attached to the universities. The training centres often also operate as open universities,
- supplementary courses for unemployed academic workers. These courses are usually intensive long courses (from 4 to 9 months) arranged in cooperation between several universities,
- supplementary study courses arranged by the summer universities Emphasis has traditionally been laid on teacher education. The courses are often planned and carried out in cooperation with the universities.

The supplementary education has to date been heterogenous as to its extent, content and structure. An estimated number of 15 000 students participate each year in university-level complementary education. Completely accurate figures are not available due to deficiences in the statistical documentation, but the number is expected to rise in the coming years.

3.6 Summer Universities

There are some twenty summer universities operating in 50 locations. As the name indicates the summer universities mainly operate during the summer months (June to August), but in recent years courses and examinations have also been arranged at other times. The summer universities ressemble in many respects some open universities abroad as they constitute a separate network attached to the higher education system.

The principle of free access is applied to all summer university courses. This means that no formal requirement as to previous knowledge is demanded. The courses are of three main categories: courses included in the regular university programmes, professional complementary courses, and supplementary upper secondary school courses. Although some of the courses correspond to courses included in the degree programmes, the basic university degree cannot be taken at a summer university.

The summer universities are registered associations supported by the local universities, university societies, provincial associations and municipalities. The permanent staff is limited, but most of the teachers are regular university teachers.

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About 40 000 students are enrolled in the summer universities each year, of whom nearly one third are regular students, another third permanently employed workers participating in complementary education, and one third upper secondary school students and other student groups.

3.7 The Open University

The development of the open university was started in Finland in the 1970s. A Committee Report was submitted in 1981 after which the open university activities are expected to progress more actively.

Open university experiments have been carried out in several universities in cooperation with adult education organizations and the Finnish Broadcasting Company. In addition to regular teaching methods, the experiments have also tested distant teaching. To date some 4 000 students have participated in these experiments.

A basic principle in the development of the open university in Finland has been to avoid the creation of a separate open university institution as for instance in Great Britain. The main concern is rather to re-organize the studies. The forecasted working field comprises i.a. professional and general complementary courses with open access for all students.

3.8 Student Selection

The number of students admitted to the universities is determined by the universities themselves on the basis of a recommandation to the universities given by the Cabinet. In recent years the number of new students has been around 12 000, which corresponds roughly to the Government recommendation.

The number of applicants is, however, much greater. At the end of the 1970s the universities received each year an average of 90 000 applications, and 45 000 applicants participated in the entrance examinations. It must be noted, however, that overlapping application is common; thus the total number of applications is not equivalent to the number of applicants.

General eligibility for higher education is achieved by passing the matriculation examination. The number of new matriculated students has ranged from 25 000 to 30 000 each year which means that a selection has to be carried out in all study fields. The selection criteria are earlier school certificates or the entrance examination, or a combination of these two. According to the new system the students are admitted to study a particular degree programme or group of degree programmes.

A central problem in the selection process is the great variety of tests. The date of application, selection criteria and tests vary from one university, faculty and

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even subject to another. Another problem is overlapping applications. Each applicant applies for entrance to 2 to 4 schools, and participates in several entrance examinations. The problem has gradually been alleviated by the adoption of the new co-selection system which means that students seeking admittance to the same field in different universitites are selected through the same tests and according to the same criteria. The co-selection system has been adopted in the fields of medicine, engineering and law.

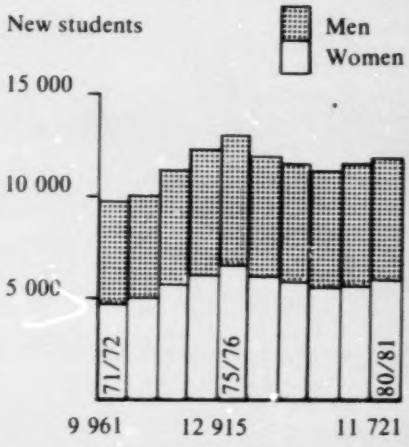
In recent years attempts have been made to improve the non-matriculated students' possibilities to enter higher education by giving recommendations concerning student quotas to be reserved for non-matriculated students in all fields. The figures go from 5 to 15 % of the total number of openings. To date these percentages have not been achieved mainly due to the fact that the vocational education does not provide sufficient knowledge background for higher education studies. At the end of the 1970s the number of non-matriculated students entering higher education was from 450 to 700 representing 4 to 6 % of the total number of students. One of the central aims of the present secondary education reform is to increase the share of general education subjects in vocational education, and thus to facilitate access to higher education for non-matriculated students.

Foreign students are accepted to all universities in Finland. A general requirement for entrance is that the student is eligible for higher education in his/her own country. The application of this general principle varies, however, between the study fields and universities.

A foreign applicant may be admitted either on the basis of previous learning certificates, or by passing the same entrance examination as Finnish students, or by passing a special English entrance examination for foreign students.

In the beginning of the 1980s there were 648 foreign students in the Finnish universities of whom 171 were postgraduate students. Of the foreign students 30 % were from the developing countries (31 from Nigeria). The largest single nationality groups consisted of students

New Students in Scientific Universities in 1971/72—1980/81



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from the United States (62), Sweden (56) and the Federal Republic of Germany (46). More than half of the foreign students were enrolled at the University of Helsinki.

A prerequisite for successful completion of higher education studies is in most cases knowledge in Finnish or Swedish which are the main teaching languages. Knowledge in these languages is not, however, necessarily a condition for entrance, but the student may acquire his/her language proficiency after admittance to the university. Some universities arrange courses in Finnish and/or Swedish for foreigners.

Before being admitted to universitites foreign students are usually requested to give an account of the financing of their studies and living expenses.

3.9 Student Life

During the past decades the share of students from the lower social classes has increased slightly (see table).

3.9.1 Financing of Studies

Higher education is in Finland free of charge, but the students have to pay a health service fee of 100 marks, and a membership fee to the student union ranging from 40 to 200 marks (1982).

In 1969-72 the provisions concerning student aid in post-comprehensive school education were reformed. The aim of the reform was to promote the study opportunities of young people from all social classes, and to provide a certain income security for the students. The Act on student aid applies to students in upper secondary schools, folk high schools, vocational institutions and universitites. Younger students can receive study allowances. Financial student aid is granted to foreign students on the same grounds as to Finnish students on the condition that they reside permanently in Finland. Consequently, student aid cannot be granted to foreign students who leave the country after the completion of their studies.

The primary aim of the state student aid system is to guarantee the students a certain minimum income. The essential part of the aid consists of state guaranteed **student loans** with reduced interest rates. **Student grants**, which need not be repaid, consist of a basic grant, and a housing allowance for single students living as lodgers. Married students are entitled to housing allowances under the provisions of the general housing support.

The Maximum Student Aid in 1983-84

Student grant	1 650 marks
Housing allowance	2 610 marks
Student loan	10 530 marks
TOTAL	14 790 marks

The Social Background of the Students and the Social Structure of the Population in 1960, 1970 and 1980.

	1960		1970		1980	
Parents	**stud.**	**pop.**	**stud.**	**pop.**	**stud.**[1]	**pop.**[1]
Higher officials or entrepreneurs	**36**	8,6	**31**	11,7	**31,3**	16,3
Lower officials or entrepreneurs	**26**	20,0	**28**	22,4	**27,7**	18,6
Qualified workers	**17**	35,5	**17**	41,8	**18,9**	44,2
Unqualified workers	**1**	8,5	**3**	6,3	**3,3**	6,0
Farmers	**18**	27,5	**19**	17,8	**18,8**	14,9
	100 %[2]	100 %	100 %[2]	100 %	100 %[2]	100 %

1) The information on the social structure is from 1975, and on the social background of the students from 1980

2) There is no category for "no information", which explains the slight deviation in the percentages.

The state guaranteed student loans are granted by the banks. The interest rate on these loans has been subsidized by the State which means that the student pays only 4 % interest during the student years and 18 months after the completion of the studies. The State pays the interest exceeding the 4 %. The normal rate varies (9 % in 1981). The amortization of the loan should be completed before the end of a period twice the length of the period of borrowing. A precondition for obtaining student aid is that the student is successful in his/her studies and does not have an income over a certain level. About 40 000 university students receive student aid each year. About 10 % of the applications are turned down.

3.9.2 Student Accomodation

The systematic development of student accomodation was started in the early 1970s on the initiative of the National Union of Finnish Students (SYL). The nationwide coordination of student housing has been handled by SYL, but the construction and maintenance of the student apartments are arranged by the local student housing foundations created by the student unions. In some towns the municipal authorities organize student accomodation.

During the 1970s some 30 000 new student apartments were built. At the end of the 1970s some 35 % of the students lived in student apartments, 30 % in rented apartments, some 20 % as lodgers, about 10 % with their parents, and about 5 % in own apartments.

The application for student apartments is handled by the local student housing foundation which chooses the tenants and lets the apartments. The selection criteria are the social and economic situation of the students, and their study achievements. Foreign students may apply for student apartments on the same grounds as Finnish students.

3.9.3 Student Meals

The student organizations, the State Nutrition Centre and private enterprises maintain cafeterias and restaurants in universities and student condominiums. Since 1979 the State has subsidized student meals allowing a reduction of 20-40 % of the price of the meals. The reduction is granted to all students presenting the student card.

3.9.4 Student Health Care

Since 1954 student health care has been arranged by the Student Health Care Foundation founded by the National Union of Finnish Students. The Foundation operates health centres in all university towns providing services for 75 000 students in 37 institutions.

The Student Health Care Foundation arranges appointments with general and specialist practitioners, dental care, mental health care, preventive health care, laboratory and X-ray services. All students pay an annual health care fee and a small fee for examination and treatment. The health care expenses are heavily subsidized through health insurance and with state support.

According to plans the student health care will be integrated to the national health care work in 1986.

3.9.5 Other Services

The universities and students organizations also arrange psysical education activities for the students. Legal and mental health care services have also been organized mainly by the student organizations. The State railways, the long-distance bus companies and Finnair grant special reductions to students, and the theatres,

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museums etc. apply special student rates.

3.10 Student Organizations

The National Union of Finnish Students

The National Union of Finnish Students (SYL) was founded in 1921 as an interest organization to represent the student organizations and to safeguard the members' interests in educational and social matters.

Nearly all student unions in the university-level institutions are members of the National Union. The students are members of the student union at their university. SYL has 30 member organizations with over 77 000 inidividual members.

The supreme decision-making body or SYL is the Congress which meets twice a year. The Congress elects the Executive Board for a one-year period. The Central Office is subordinate to the Executive Board and appoints secretaries for separate field matters.

SYL is an associate member of the International Union of Students (IUS), and engages in bilateral cooperation with student organizations in most European, many African, Latin American and Asian countries. The contacts with the student organizations in the other Nordic countries and the Soviet Union are of particular interest to SYL. SYL has actively participated in youth and student meetings and campaigns for the promotion of international peace and disarmament, particularly in campaigns for the promotion of assistance to the developing countries.

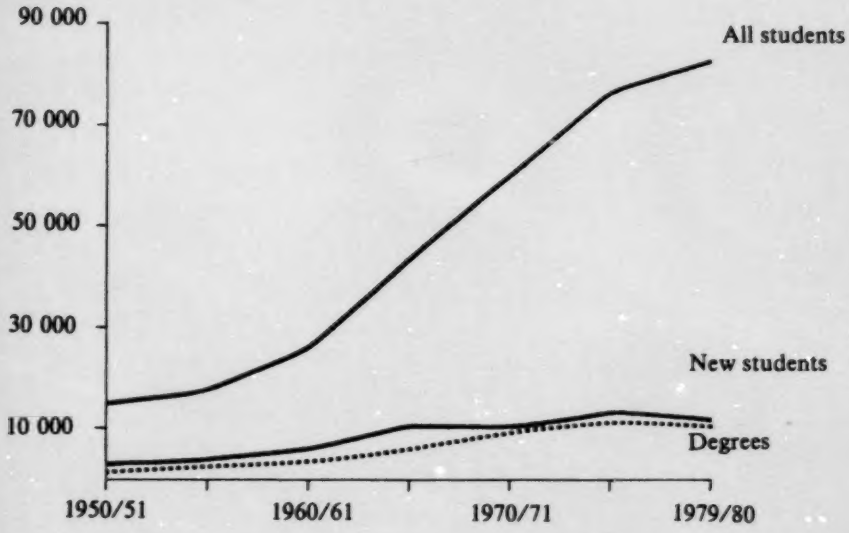
Local Student Organizations

All university students become automatically members of a student union. The task of the unions is to work for the improvement of the study conditions, arrange cultural activities, maintain international contacts, and engage in bilateral cooperation and student exchange programmes with student organizations abroad.

The older universities also have so-called student nations (fraternity societies) in which membership is voluntary and determined by the students' place of birth. Thus, there are student nations for the Province of Häme, for Southern Finland etc. The fratemities provide social services, meals, apartments, cultural programmes, entertainment etc.

The task of the faculty and institute organazations is to gather students within a particular faculty or institute, and to develop the work and activities within these units. The student organizations with political affiliations play an important role in the decision-making bodies of the student unions. In addition to there are many sports and hobby-orientated organizations.

University Students and Degrees



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4 SCIENTIFIC RESEARCH

4.1 General

About 1,2 % of the GNP is allocated to science and research. Research is conducted in universities and research institutes and financed by the state, municipalities, industry as well as by funds and foundations.

The higher education institutions have been in the past and still are the most important research institutes in the public sector. Research is carried out in all fields with emphasis on basic research. The universities perform about 22 % of the R&D man years and account for about 18 % of all research expenditure.

The first State research institutes were founded at the turn of the century in the field of geotechnology and agriculture and forestry. The research institutes have the advantage of being able to concentrate on specific areas and have consequently been established in fields of particular weight for the exploitation of national resources. The Technical Research Centre, which is the largest unit, range its activities over a large scale of technological sciences.

In 1982 there were 25 research institutes subordinate to various ministries. The research expenditure of these institutes represented only two thirds of the research costs of the universities.

Of these institutes the National Board of Antiquities and Historical Monuments, the State Archives, the Research Centre for Domestic Languages and the Tampere Peace Research Institute fall under competence area of the Ministry of Education.

The Academy of Finland consists of a Central Research Committee and six research councils. The Academy disposes over research professorships, as well as fixed term researcher posts and assistantships (mainly in universities), and grants senior researcher scholarships and allowances to cover expenses for i.a. assistant research staff. Some projects are also financed through research commissions.

The Academy of Finland finances about 12 % of university research, and is thus the most significant outside financer.

Since the 1960s the ministries have disposed over research appropriations designated to finance research commissions supporting the own decision-making. The most relevant are the loans and grants granted by the Ministry of Trade and Industry for the promotion of industrial product development. Another funding agency in this field is the Finnish National Fund for Research and Development (SITRA).

In the private sector research is performed by research institutes and enterprises mainly in the field of technology. The research expenditure in the private and

the public sectors are roughly of the same magnitude, but the number of research staff is somewhat greater in the public sector.

Research Man Years per Sector in 1979

Private sector	45 %
Public sector	31 %
Private non-profit sector	1 %
Higher education institutions	23 %

Research and Product Development Expenditure According to Discipline in 1979

Technology	58 %
Natural sciences	13 %
Agriculture and forestry	10 %
Social sciences	7 %
Medical sciences	9 %
Humanities	2 %

4.2 Science Administration

The reorganization of the science administration was implemented at the end of the 1960s and the beginning of the 1970s. The present system can be characterized as semi-centralized with the Ministry of Education as the central ministerial unit. The competence of the Ministry of Education does not, however, extend to research performed and financed by other ministeries. The task of the Ministry of Education is to promote the development of research and scientific education in general.

The advisory body in science affairs is the **Science Policy Council** chaired by the Prime Minister, and with five members of the Cabinet and seven other members appointed by the Cabinet. The task of the Science Policy Council is i.a. to discuss general guidelines for the development of research and post-graduate education, the allocation of research funds to the ministries and research institutes, the establisment of new research units and Finland's participation in international science cooperation.

The **Academy of Finland** is an office subordinate to the Ministry of Education. It consists of the Central Research Committee and research councils for the humanities, the natural sciences, agriculture and forestry, technology, the social sciences, and the medical research council. The members of the councils are appointed by the Cabinet on the basis of recommendations put forward by the universities, research institutes, and scientific societies and organizations. The Adademy is in charge of the planning and development of science policy and receices and annual appropriation to support research in the universities.

Research activities carried out in other ministerial fields is subject to the regular decision-making process of the ministries in question. Many ministries have special advisory bodies with representatives from relevant research institutes, universities or industrial sectors.

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Research and Development Work in Competitor Countries in 1979

Countries	Share of Finnish export in 1981, %	R&D exp.: of GNP, %	The private sector's R&D exp. of all R&D exp., %	Public fin. of business sector R&D work, %
Sweden	13.4	1.9	67.7	12.8
Great Britain	10.6	2.2 1)	64.2 1)	29.2 1)
FRG	9.1	2.3	65.1	21.1
Norway	4.7	1.4	49.4	24.1
France	3.9	1.8	59.5	21.6
USA	3.7	1.4	67.6	32.8
Netherlands	3.4	2.0 1)	51.3	5.1 1)
Denmark	3.3	1.0	51.1	11.2
Italy	1.9	0.8	57.6	6.3
Belgium	1.5	1.4	69.6	4.9
Switzerland	1.4	2.5	75.9	2.7
Total (share of Finnish export)	56.9	1.9	63.0	18.8
Finland		1.1	54.8	3.1 2)

1) Information from 1978
2) In accordance with OECD practice public financing only includes aids and grants.

Source: OECD Statistics

4.3 Science Policy

The basis for the science and research system in Finland was laid at the end of the 19th century. In this system the universities and the research institutes determined independently the orientation of scientific research, and the role of Parliament and the Cabinet was mainly to create the operational frames. A nation-wide coordination, planning and funding of research was started only in the 1950s.

In the 1960s attention was focused on raising the level of research input to a competitive international level and on examining the impact of technological research on the economic growth. In 1966 the Act on the development of higher education was passed through Parliament. One of the priority areas in the Act was the increase of students in medicine and the natural sciences. At the same time the Ministry of Trade and Industry started to finance energy research and product development projects.

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In 1963 the former Cabinet Sub-Commission for Research Affairs was reorganized as the Science Policy Council charged i.a. with the allocation of the research appropriations in the State Budget. A systematic science policy planning was initiated at the beginning of the 1970s after the reformation of the central science administration.

In 1970-73 the six Research Council of the Academy of Finland prepared their science policy programmes which partly constituted a basis for the Science Policy Programme of the Central Research Committee. This programme has been called the first science policy programme in Finland, and its central aim was to obtain a radical increase of the research input, and to direct the activities "into fields of central importance to society". A significant incentive for the making of the Programme was the Brooks Report published by OECD in 1971.

A still more signigicant document than that of the Central Research Committee was the programme on the Outlines of Finnish Science Policy in the 1970s prepared by the Science Policy Council in 1973. The most urgent tasks of science policy were according to the Council the assessment of research needs in the various fields of R&D and the allocation of the resources in accordance with these assessments. The priority areas in the Programme were the promotion of employment, the enhancement of regional equality and welfare and the improvement of the balance of payment.

The latest document in the field is the Science Policy Council's review Research and Development in Finland in the 1980s (also available in English) which emphasizes a balanced development of the entire science field. The report concentrates on four segments of research: basic resarch, research in support of social policies and services, energy research, and R&D for the promotion of industrial growth. The quantitative goal involves the attainment of 2 % of the national expenditure for research by the end of the 1980s.

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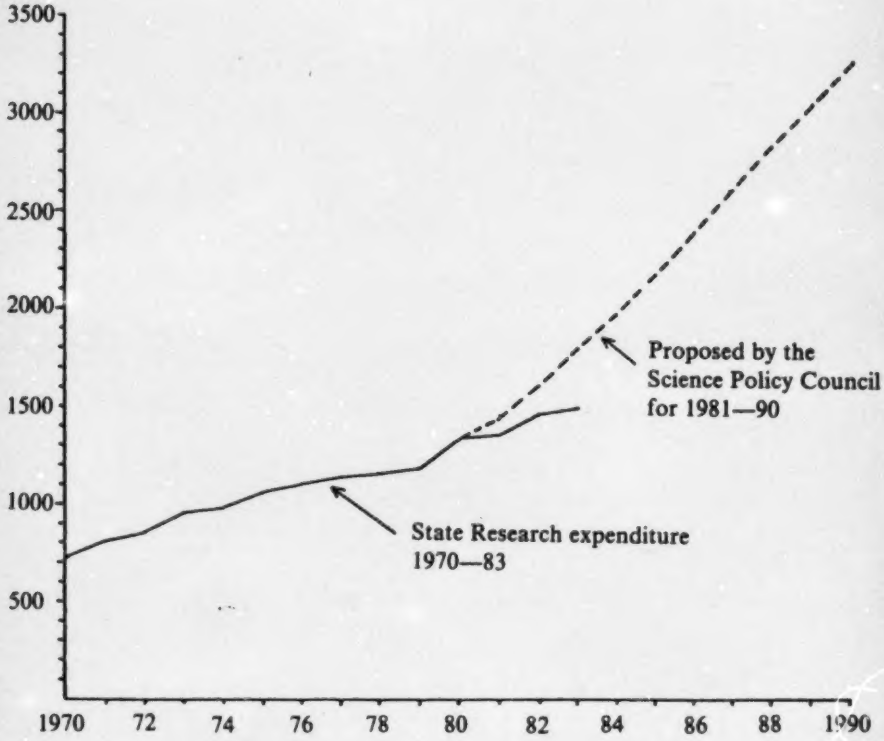
State Research Expenditure

Million marks at 1982 rate



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Research Expenditure in OECD Countries in 1979 and their Share of the GNP (%)

Countries	Research expenditure, million marks	Share of research exp. of the GNP (%)
USA	218 811	2.4
Japan	78 165	2,0
FRG	67 657	2,3
France	40 405	1,8
UK	27 249	2,2
Netherlands	11 478	2,0
Italy	10 605	0,8
Switzerland	9 047	2,5
Canada	8 314	0,9
Sweden	7 827	1,9
Belgium	5 906	1,4
Australia	4 317	1,0
Denmark	2 493	1,0
Norway	2 482	1,4
Finland	1 748	1,1
Ireland	440	0,8
Other countries	—	—
Total	496 981	

Finland's share of OECD's total research expenditure 0,35 %

Source: OECD Statistics

4.4 The Position of the Higher Education Institutions in R&D Work

The higher education institutions hold an extremely important position in the Finnish research system. About half of the research personnel in the public sector and one third of all research personnel work in universities. The universities account for about 40 % of the public research expenditure in the 1970s and 1980s.

Conducting research and teaching scientific argumentation and methology are the central tasks of the universities. In all disciplines, except medical science, the students have to prepare a scientific thesis.

The post-graduate studies consist of two degrees: licentiate studies, including the preparation of a licentiate dissertation, and doctorate studies requiring the preparation of a doctorate dissertation. The

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Research Expenditure by Performing Sector (in %) from 1969 to 1981

Performer	1969	1971	1973	1975	1977	1979	1981
Enterprises	48	54	53	52	52	55	57
Public sector	25	22	22	26	26	26	26
Universities	24	21	22	21	21	18	16
Private non-profit sector	3	3	3	1	1	1	1
Total	100	100	100	100	100	100	100
Millions marks	299	436	624	954	1299	1748	2489

licentiate degree is not required before taking the doctorate.

Most of the research studies produced in universities are Master's theses and dissertations. The university teachers and full-time researchers as well as the professors and assistants have research duties. Most of the full-time researchers work in the research institutes attached to the universities, of which there were 12 in 1982. The researchers and research assistants at the Academy of Finland form another group who do not have any teaching and administrative duties. Most of the research conducted in universities is basic research at a high academic level. About 50 % of all holders of licentiate and doctorate degrees are employed as teachers or researchers in universities. About 5 % of the researchers in the industrial sector have a post-graduate degree.

The dominance of basic research is ensued from the univestities' function as general promoter of the scientific development. The universities are not committed to directing research to alleviate particular practical needs. The share of basic research is estimated to some 60 % of all research, and the share of applied research to 30 % and product development to 10 %. There are, however, considerable variations between the institutions and disciplines, Basic research clearly dominates in multidisciplinary universities, while the universities of technology and economics and business administration are more inclined to engage in applied research. The universities of technology and many institutes conducting experimental research also carry out research on commission.

In the university budget research expenditure has not been differentiated from

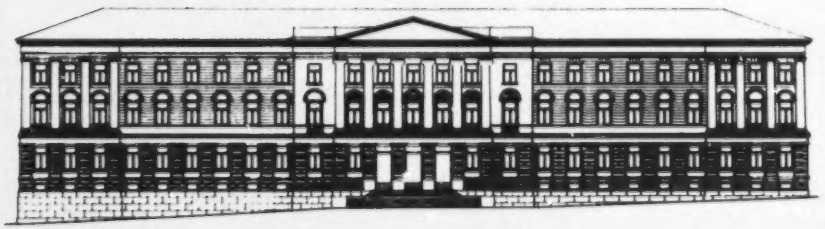
teaching and administrative costs. Most of the research expenditure is allocated through the State Budget. University reseachs are also supported by external financers, the most important of which is the Academy of Finland, by various administrative agencies, private funds and foundations, and the industrial sector. The share of foreign funding is very limited.

In the universities there is complete freedom in research matters. The subject matters, methods and research results are left to the researchers' own discretion. In practice the financing institutions can direct resources to some particular field, and guide the researchers' attention on certain problem area.

The universities have some research funds for use by their own discretion to support research projects deemed as particularly important. In the 1970s the universities prepared on the request of the Ministry of Education research policy programmes and statements. In their regular Middle Term Plans the Universitites have also included a list of high priority research projects. Many universities have consciously pursued to serve research needs in the immediate surrounding.

4.5 Activities Supporting Research

The library and information system provides valuable services to the scientific community. The university libraries form a central part of this system beholding 85 % of all scientific literature in the country. The university libraries have been created mainly to satisfy the needs of university students and teachers, but also to serve other clients in need of scientific and technological information. As for other auxiliary service, such as ADP-services, the research field is more decentralized.



Main Building of the University of Helsinki
Source: The University of Helsinki Today and Yesterday, The Information Office of the University of Helsinki, 1982

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SELECTED LITERATURE ON EDUCATION AND RESEARCH IN FINLAND

Educational Development in Finland 1979—1981. Reference Publications 10. Ministry of Education. Helsinki 1981.

Finland. Review of National Policies for Education. OECD Paris 1982.

Guide for Foreign Students. Higher Education in Finland. Ministry of Education. Helsinki 1982.

Research and Development Work in Finland in the 1980s. The Science Policy Council of Finland. Helsinki 1979.

Science Policy Review. Research and Development in Finland in the 1970s. The Science Policy Council of Finland. Helsinki 1979.

Social Sciences Policy: Finland. OECD Paris 1981.

Participation in Adult Education (under preparation).